CLAIMS

WE CLAIM:

1. A Web interface module for an industrial control system including a programmable logic controller for executing an industrial control program, the programmable logic controller communicating over a controller network with I/O modules, the I/O modules sending and receiving electrical signals to and from an industrial process, the Web interface module comprising;

an Internet interface for connecting to a Web accessing communications medium;

a network interface for connecting to the controller network; and

a processing unit executing a stored program to communicate directly with at least one I/O module and to pass data between the Web accessing communications medium and the I/O module;

whereby communications may be had with the I/O module without intervention of the programmable logic controller.

2. The Web interface module of claim 1 wherein the processing unit also executes the stored program to receive a write disable command from the programmable logic controller causing the stored program to allow direct reading of data from the I/O module but not direct writing of data to the I/O module;

whereby conflicting writing of data to the I/O module is prevented.

3. The Web interface module of claim 1 wherein the network interface provides a connected messaging protocol.

4. The Web interface module of claim 1 wherein the processing unit executing the stored program also opens at least one connection on the connected messaging network between the programmable logic controller and the Web interface to transfer data between the programmable logic controller and the interface.

5. The Web interface module of claim 1 wherein the connected messaging network is selected from the group consisting of ControlNet, DeviceNet and EtherNet.

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6. The Web interface module of claim 1 wherein the Web accessing communications medium is selected from the group consisting of a wire cable, a fiber optic cable, and a radio link.

7. The Web interface module of claim 1 wherein the processing unit executing the stored program opens connections on the connected messaging network with a plurality of I/O modules and wherein the processing unit includes an I/O image table and wherein the passing of data between the Web accessing communications medium and the I/O module separately reads and writes data between the Web accessing communications medium the I/O image table, and between the I/O modules and the I/O image table;

where the transfer of data between the Web accessing communications medium and the I/O is implemented through the I/O image table.

8. The Web interface module of claim 7 wherein the processing unit executing the stored program reads and writes data between the I/O image table and the I/O modules in a predetermined order.

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9. The Web interface module of claim 1 wherein the connected messaging network comprises a parallel backplane between the Web interface module and the programmable logic controller and a serial network between the backplane and the I/O modules.

10. The Web interface module of claim 9 wherein the network interface of the Web interface module attaches to the backplane.

11. The Web interface module of claim 9 wherein the network interface of the Web interface module attaches to the serial network.

12. An industrial control system for an industrial control system comprising:
a plurality of I/O modules sending and receiving electrical signals to and from an industrial process;
a controller network communicating with the I/O modules;
5   a programmable logic controller attachable to the controller network to execute a stored control program to exchange data with the I/O modules over the controller network to control the industrial process; and
a Web interface module including:
(a) an Internet interface for connecting to a Web accessing communications
10   medium;
(b) a network interface for connecting to the controller network; and
(c) a processing unit executing a stored interface program to communicate directly with at least one I/O module and to pass data between the Web accessing communications medium and the I/O module;
15   whereby communications may be had with the I/O module without intervention of the programmable logic controller.

13. The industrial control system of claim 1 wherein the processing unit also executes the stored program to receive a write disable command from the programmable logic controller causing the stored interface program to allow direct reading of data from the I/O module but not direct writing of data to the I/O module;
5   whereby conflicting writing of data to the I/O module is prevented.

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14. An industrial control system for an industrial control system comprising:

a plurality of I/O modules sending and receiving electrical signals to and from an industrial process;

a connected messaging network communicating with the I/O modules;

5 a programmable logic controller attachable to the controller network to execute a stored control program to open connections and exchange data with the I/O modules over the connected messaging network to control the industrial process; and

a Web interface module including:

(a) an Internet interface for connecting to a Web accessing communications

10 medium;

(b) a network interface for connecting to the connected messaging network; and

(c) a processing unit executing a stored interface program to open connections on the connected messaging network between at least one I/O module and the Web interface module and to pass data between the Web accessing communications medium and the I/O

15 module;

whereby communications may be had with the I/O module without intervention of the programmable logic controller.

15. The industrial control system of claim 14 wherein the processing unit executing the stored interface program also opens at least one connection on the connected messaging network between the programmable logic controller and the Web interface to transfer data between the programmable logic controller and the interface.

16. The industrial control system of claim 14 wherein the connected messaging network is selected from the group consisting of ControlNet, DeviceNet, and EtherNet.

17. The industrial control system of claim 14 wherein the Web accessing communications medium is selected from the group consisting of a wire cable, a fiber optic cable, and a radio link.

18. The industrial control system of claim 14 wherein the processing unit executing the stored interface program opens connections on the connected messaging network with a plurality of I/O modules and wherein the processing unit includes an I/O image table and wherein the passing of data between the Web accessing communications medium and the I/O module separately reads and writes data between the Web accessing communications medium and the I/O image table, and between the I/O modules and the I/O image table;

where the transfer of data between the Web accessing communications medium and the I/O is implemented through the I/O image table.

19. The industrial control system of claim 18 wherein the processing unit executing the stored interface program reads and writes data between the I/O image table and the I/O modules in a predetermined order.

20. The industrial control system of claim 14 wherein the connected messaging network comprises a parallel backplane between Web interface module and the programmable logic controller and a serial network between the backplane and the I/O modules.

21. The industrial control system of claim 20 wherein the network interface of the Web interface module attaches to the backplane.

22. The industrial control system of claim 10 wherein the network interface of the Web interface module attaches to the serial network.

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